Center Independent Research & Development: GSFC IRAD

Spectrometer for Measuring Water Ice on Airless Bodies

Completed Technology Project (2014 - 2015)

Project Introduction

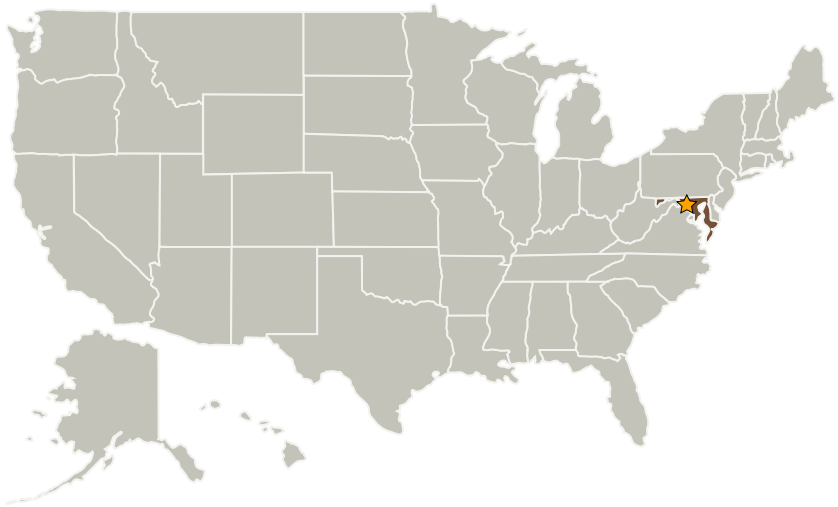
We propose to develop and demonstrate breadboard of a multi-wavelength to identify possible water ice and frost on the surface. The results will enable unambiguous mapping of the amount of the water ice and water-related species, such as chemically bound water, adsorbed water, hydroxyl, and ice.

The objective of this IRAD is to continue the development of a multi-wavelength spectrometer. Here we propose an instrument concept used to change the wavelength to measure surface. The new concept can be used to map the water ice and frost on any airless bodies, such as the Moon and comets, at a greater sensitivity to the elements under study.

Anticipated Benefits

Future missions to study the moon, asteroid, and comets.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

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Co-Funding Partners	Type	Location
University of Hawaii Maui College	Academia	Kahului, Hawaii

Primary U.S. Work Locations
Maryland

Links

An orbital lidar spectrometer for lunar polar compositions
(http://www.hou.usra.edu/meetings/lpsc2014/pdf/2335.pdf)

GSC-17203-1
(no url provided)

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

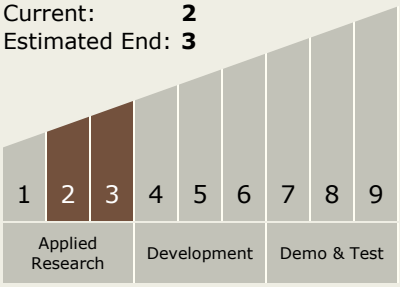
Brook Lakew

Principal Investigator:

Xiaoli Sun

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **3**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers